# OCCUPATIONAL Hazards

JUNE 1941

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PERIODICAL DIVISION

- How We Got 2500 People to Wear Goggles
- Safe Limits for Toxic Materials
- What the Woman Worker Should Wear
- Dust Control Equipment in Ceramic Industry
- New Ideas in the Field

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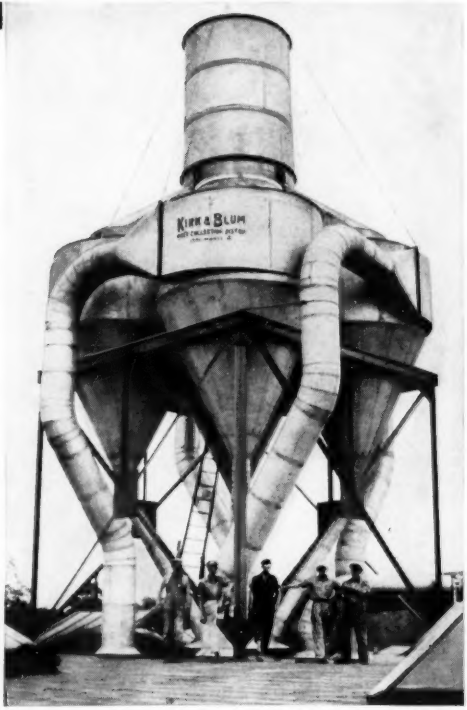


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## —a general utility shield

Providing workmen with clear, undistorted vision and adequate protection at a wide variety of hazard points in industry, Type C-5, illustrated here, is light in weight, well ventilated, spark-resisting. Easily adjusted to fit any head in snug comfort. It has a full metal binding and a moulded fibre spark deflector. Visor pivot assembly allows quick adjustability to any angle. Visor depth 4"—available up to 9". Furnished in five shades—clear, amber, smoked, light and dark green.

The Jackson Eyeshield Folder illustrating and describing our complete line of shields should be in the hands of everybody interested in modern devices for protecting the eyes and face. **Send for your copy today.**

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**Contact your dealer. If he can't supply you with a genuine JACKSON SHIELD, please write to us.**

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## Vitamin "A"—Cost Factor

Ralph F. Bisbee, Supervisor of Quality Control at Westinghouse Electric Company's Merchandising Division, located in Mansfield, Ohio, reports how quality control develops the use of widely separated devices to improve products and reduce selling prices. "By feeding vitamin A to workmen," Mr. Bisbee says, "more than $5,000 a year for the past three years has been saved through reduction of the number of "off-color" parts in assembling electric ranges."

### Vision Deficiency

Investigation disclosed that the sensitivity of the human eye is dependent on the changes that take place in a substance called "visual purple," which is contained in the eye's retina. In order for the eye to maintain its sensitivity, the amount of this visual purple substance changed must be continually replaced, or regenerated. It was this fact that paved the way for the entrance of vitamin A treatment, for it was found that if the rate of regeneration of visual purple is below normal, the use of vitamin A treatment will bring it up to, or higher than normal in almost every case. A balanced diet of foods containing sufficient vitamin A will accomplish the same results.

With this retinal fatigue preventative, the seeing accuracy of inspectors was improved to such a degree that rejects on the assembly line have been reduced from an average of 1.7 per cent to an average of only three-tenths of one percent.

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# Useful FREE LITERATURE

The literature briefly described in this department gives important information on products and equipment designed to control occupational hazards. Manufacturers' technical executives tell of the features to be found in their goods. Be sure to get all available data through this literature before buying. Note those items desired on coupon below and mail. See pages 30, 31, 32 for New Ideas.

420—**EYE AND FACE PROTECTION CATALOG—SELLSTROM MFG. CO.**—36-page liberally illustrated catalog describing their line of goggles, helmets, spectacles, face shields and other miscellaneous safety items.

421—**MAN-COOLING APPARATUS — DE BOTHEZAT VENTILATING EQUIPMENT**—Circular outlines uses for their Air-Jet, a man-cooler particularly adapted for reducing fatigue of workmen in foundries and steel mills. Performance and engineering data given.

422—**ACCIDENT PREVENTION SIGNS—STONEHOUSE SIGN COMPANY**—Complete line of signs displayed in 72-page catalog. Prices, operating features, specific wording and sizes all are mentioned.

423—**RUBBER MATS—B. F. GOODRICH COMPANY**—In an 8-page catalog section Goodrich describes their line of perforated mats and matting.

424—**PAPER CUSPIDORS — BURNITOL MFG. CO.**—Pamphlet tells of user experience with disposable paper cuspidors. Prices and trial order offered.

425—**UTILITY DUST COLLECTOR—U. S. ELECTRICAL TOOL COMPANY**—Circular tells of all metal unit for removing dust and other abrasive particles from localized grinding operations. Adjustable hoods and safety eye shields also mentioned.

426—**WATER COOLERS—HALSEY TAYLOR COMPANY**—12-pages devoted to the description of the many water coolers manufactured by this company. Clearly detailed account of operating features is included.

427—**VENTILATING AND EXHAUST FANS —EMERSON ELECTRIC COMPANY**—16-page catalog illustrates their line of exhaust fans and contains information on ventilation. Dimensions, performances, and prices are included.

428—**NON-SLIP FLOORS — NATIONAL BRONZE AND ALUMINUM FOUNDRY CO.**—Folder details industry's uses for Tenlox, a cast aluminum alloy embedded with abrasive grits, making for slip-proofness.

429—**SANITATION EQUIPMENT—CRANE COMPANY**—In a 32-page booklet full information on Crane fixtures for industrial and commercial buildings is given. Profusely illustrated.

430—**SAFETY CLOTHING CATALOG—SAFETY CLOTHING AND EQUIPMENT COMPANY**—Well-conceived catalog giving information on various safety items like clothing, gloves, goggles, etc.

FREE LITERATURE COUPON Clip out and paste on postcard or enclose in envelope. Mail to: OCCUPATIONAL HAZARDS, 812 Huron Road, Cleveland, Ohio.

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FL-32

*Bradley Washfountain Installation at Norton Co. plant.*

## In Modern Sanitary Washrooms You'll Find Bradley Washfountains

**Bradley Washfountains provide ample and sanitary washing facilities.—Each Washfountain serves 8 to 10 persons simultaneously with running water from a central sprayhead. The bowl is self-flushing to prevent collection of water and contamination. And it is set low so that it is easy to wash hands and arms—in fact you can wash to the waist.**

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### Unsafe Practices

Here are some things to look for when making a safety inspection dealing with unsafe practices:

a. Do men operate machinery, or use tools, appliances, or other equipment without authority.

b. Are they working or operating at unsafe speeds?

c. Have guards been removed, or have guards or other safety devices been rendered ineffective.

d. Do men use defective tools or equipment; or use tools or equipment in unsafe ways; or use hands or body instead of tools?

e. Do they overload or crowd, or arrange, or handle objects or materials unsafely?

f. Do men stand or work under suspended loads, open hatches, or shafts, or scaffolds, or ride loads; or get on or off equipment or vehicles in motion; or walk on railroad tracks; or cross car tracks or vehicular thoroughfares except at crossings?

g. Do they repair or adjust equipment in motion, under pressure, electrically charged, or containing dangerous substances?

h. Does anyone distract the attention, or startle, other workers?

i. Is there any failure to use safety devices or protective clothing?

j. Are there any other unsafe acts of persons?

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JUNE 1941

VOLUME 3 NUMBER 9

Copyright, 1941, by The Industrial Publishing Company. Published Monthly by The Industrial Publishing Company, 812 Huron Road, Cleveland, Ohio. Irving B. Hexter, President and General Manager, Lester P. Aurbach, Vice-President.

Jack Weiss, Editor

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Circulation this issue more than 23,200 copies

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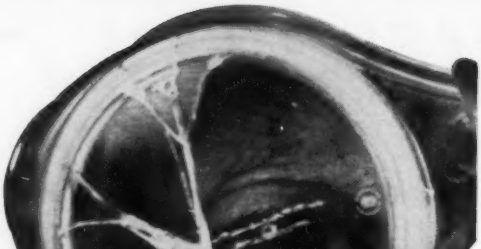


# HOW we go 250 to WEAR GO

J. E. MERCURE, General Electric Co.,

***General Electric went to work on their goggle problem and came through with a system that clicks***

AMONG the many problems that face industry today one of the most imperative is how and to what extent shall we protect the workers' eyes. Where do eye hazards exist? What type of goggles should be supplied the workers?

We in the General Electric Company have grappled with this question very seriously and at great length. In our booklet of Safety Instructions and Information we have a section which reads as follows:

"An injured eye has no trade-in value on a glass eye. We can furnish plenty of goggles but no eyes. Approved goggles furnished by the company shall be worn where required. For example; near splashing materials, grinding, chipping, cutting, welding, or in any other operation which releases flying particles, dust, etc."

Every employee at the time of engagement is given a copy of this booklet on Safety with the request that it be read and that the safety regulations be followed.

We have always carried a large supply of safety goggles and any workman always could have a pair on request at the tool crib in his department. We thought we were doing a good job of protecting the eyes of our employees, yet we continued to have eye accidents. About four years ago we made a concentrated study of our eye accidents and during the course of this study we gathered interesting information. Surprisingly enough, our eye accidents were not where we expected them to happen. We found that safety goggles were being worn where hazards were known to exist.

**Unique Accidents**

For instance, all foundry employees, those grinding, cutting, or chopping steel had goggles and generally wore them. But we found that our accidents were among those operating lathes, shapers, milling machines, or drills. A flying nail not properly hit found a man's eye. A man carrying an open top

# go2500 PEOPLE AR GOGGLES

Gene tric Co., Pittsfield, Mass.

quart can containing a pint of solvent dropped the can and the solvent splashed into his eyes. A man tightening a nut let the wrench slip and it struck him in the eye. A man cut off a short piece of copper wire with a pair of pliers and the piece of wire hit him in the eye. A man was doing light assembly work on a conveyor when a porcelain fell and broke. At the hospital we took a piece of it out of his eye. A piece of steel fell out of a bin in a stock room and hit the stock clerk in the eye. We had not expected such accidents to happen and therefore were not prepared.

So we tried to persuade our machine operators to wear goggles. They claimed that they bothered them, steamed up, limited their range of vision, and those who wore spectacles for eye correction complained that the goggles caused an eye strain. We checked this last point and agreed that for close accurate work, goggles over spectacles were a handicap. Men in our shipping department objected to wearing goggles, claiming that they limited their range of vision and caused them to hit their fingers. Stockkeepers would not wear safety goggles.

At the start of this study into the cause of eye accidents it occurred to us that most of those who reported eye injuries to the hospital did not wear spectacles. We then arranged with the hospital staff that in all cases of eye injuries, a notation would be made on the record whether that person wore spectacles or not. After nine months of recording, we found practically no eye injuries amongst the wearers of spectacles, the exception being where the spectacle lens was broken and pieces of lens had injured the eye.

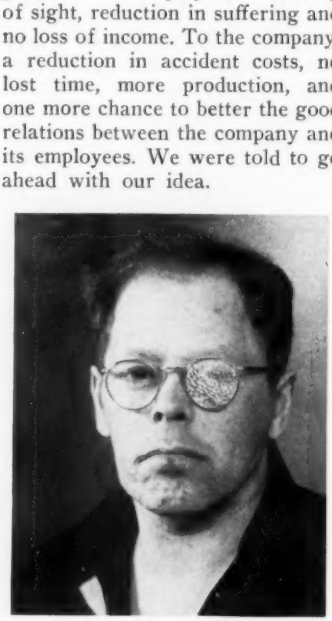
An idea! Spectacles are a good protection! Based on this record, why not supply safety spetacles in place of goggles and if a workman wore prescription spectacles, supply him with spectacles ground to his prescription.

### Reduction in Costs

It required no effort to sell this idea to our Works Manager who

***Demonstrating Safety Goggles. The author is shown driving eightpenny nails through two inch thick wood with pair of spectacles.***

is decidedly safety minded. He could see benefits in this idea to both the employees and to the company. To the employee, the saving of sight, reduction in suffering and no loss of income. To the company, a reduction in accident costs, no lost time, more production, and one more chance to better the good relations between the company and its employees. We were told to go ahead with our idea.



***Safety spectacles saved the sight of this man's eye.***

At this point we encountered a real problem. Each pair of safety spectacles would have to be fitted to the individual by someone trained in the art.

Our plant employing some 8,000 men and women has 60 buildings with a total floor area of 2,340,000 square feet spread over 222 acres. A plant of this size seemed best served by dispensing safety goggles from the many tool cribs scattered over the plant. But this would mean a large number of tool crib attendants who should also become fitters of spectacles, and there was a real problem.

There were some features about the issuing of safety goggles from many tool cribs that were not desirable; namely, our inventory of goggles was too high, a workman wanting safety goggles had them handed across the tool crib counter, sometimes they were suitable to his work, sometimes not; sometimes they fitted, not always; sometimes they were new goggles; sometimes they had been worn and returned, not too clean and were being given out again in the same condition, and this did not encourage the wearing of goggles.

I am here reminded of a story told by the General Superintendent of a large plant who visited another plant and as he was about to go out into the manufacturing departments his guide took a pair of goggles from the drawer of his desk and told this General Superintendent that he would have to wear these while in the plant. The General Superintendent stated that they were not clean, they did not fit, they obscured his vision, and as a result he nearly fell into a pit during the trip through the plant. After this experience he said he sympathized with anyone who must wear safety goggles.

I told him that such a condition had, at one time, existed at our Pittsfield Plant but today he would have a different experience if he needed protection while there. He would now be asked to go to our Works Hospital where a nurse trained to the art of properly fitting safety goggles and spectacles would supply him with clean, safety

spectacles and these would be properly fitted to him before he left the Hospital.

**Trained Fitters**

About three years ago we arranged, with the approval of our plant doctor, that our Hospital staff be trained in the art of properly fitting goggles and safety spectacles. They were also taught how to measure for pupillary distance, distance between lenses, temple length, and how to determine the size of lenses and type of frame. We obtained the services of an expert from a company manufacturing safety goggles and spectacles to teach us these things. I also took this course, which was of two days duration, with the Hospital staff.

We then prepared a chart for use by our Hospital staff showing what type of goggles or spectacles should be worn for each class of work in the plant.

Our next step was to withdraw all safety goggles from every tool crib. At the same time a notice was issued that from that date all forms of eye protection would be issued from the Works Hospital and then only to the individual for whom intended. In every case they would be carefully fitted and special attention would be given to supplying the correct type of goggle or spectacle.

We also arranged, at a central point in the plant, where goggles or spectacles in need of repair would be reconditioned at any time upon presentation. Whenever an employee is finished with a pair of goggles or spectacles they are sent to this central point for inspection.

## PLANT DOCTORS

Say cleanliness helps prevent industrial dermatitis. For further details write to **Lightfoot Schultz Company, 663 Fifth Ave., New York.**

If possible they are reconditioned, cleaned, sterilized, and placed in stock to be re-issued; otherwise, they are scrapped.

After carefully preparing this setup we were now ready to start a campaign of introducing the use of safety spectacles where cup type goggles were not wanted. First, we convinced the foreman that eye hazards existed in his department, sold him the idea of using safety spectacles and demonstrated how safe they were by driving eight penny nails through a 2" thick block of wood using a pair of spectacles as a hammer.

We then arranged to give a safety talk on eye protection to groups of workmen in that department telling them of the value of safety spectacles, and ended these talks with a demonstration of driving nails. In every case we invited someone in the group to try driving these nails to be convinced that there was no trick to this demonstration.

By this means we gradually educated our employees to the value

*(Please turn to page 29)*

# CONTROL GERMS!

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PROTECT workers health. Remove disease producing germs by using Burnitol Cuspidors. Burnitol Cuspidors are waterproof, wire stitched. They cost only a fraction of one cent and are used by leading manufacturers everywhere.

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## Pangborn Change

Mr. Forrest G. Sharpe, formerly assistant to the Sales Manager, in the Pangborn home offices at Hagerstown, Md., has been appointed Philadelphia Sales Engineer to fill the vacancy caused by the sudden death of William T. Randall. He brings 16 years of dust control experience to this new responsibility.

## Clever Idea

W. H. MacKay, Personnel Manager of the Dunlop Tire and Rubber Corporation, Buffalo, New York has put the "old white elephant" to good use in their safety program.

The elephant is rolled into that department having a lost time accident and must be displayed quite prominently for a period of four days. It is always in evidence, however, because when there are no accidents the elephant is kept in a lighted display case at the front of the Dunlop plant. Mr. MacKay points out that the white elephant is not very popular and every effort is made to keep it in the front office.

***The elephant nobody wants at Dunlop. His presence is of no good.***

Similar ideas are in use throughout industry, doing an effective job quietly and efficiently.

# Safe Limits Established For Certain Toxic Materials

***Well designed ventilating system enables large rayon plant to keep well below toxic limits for carbon disulphide.***

BETTER protection for workers from the hazards of toxic dusts and gases in many industries is foreshadowed in the completion of three new standards by the American Standards Association. One of these sets safe limits for the amount of hydrogen sulfide in the air of factories and other workplaces. Another covers carbon disulfide, and a third benzene.

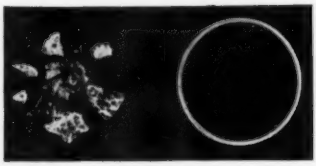
These three standards which have just been completed, and a fourth covering allowable concentrations of carbon monoxide, are part of an ambitious program to set safe limits for every toxic substance that presents a serious industrial health hazard. The limits set forth in these three standards were arrived at after a careful study of all previous work in the field, reinforced by the experience of the members of the committee in charge which represents 12 national organizations interested in industrial health problems and the U.S. Department of Labor. Wide industrial participation in the work ensures that the limits set are not merely medical or physiological limits but can be maintained by industry without undue cost.

Each of the standards contains information on the toxic substance in question, gives a permissible range of concentrations, suggests methods of sampling and analysis.

Hydrogen sulfide, the subject of one of these new American Standards, is familiar to most people as a colorless gas having an offensive odor, as of rotten eggs. Exposure to it causes irritation of the entire respiratory system and of the eyes. In high concentrations it may produce respiratory paralysis and damage to the nerves. This gas occurs naturally in the gases of volcanoes and in the water of certain spas. In mines, it is frequently produced by the decomposition of pyrites and it is present in certain sulphur-carrying brands of coal oil. It is formed wherever protein-containing materials are rotting, as for instance in tanneries, in the manufacture of glue, the washing of sugar beets, and in sewer gases. Hydrogen sulfide is very widely used in the chemical industries, in the manufacture of rubber, and in the manufacture of rayon. The newly completed American Standard sets as the maximum allowable concentration of this gas, 20 parts per 1,000,000 parts of air for exposures not exceeding a total of eight hours daily.

**Greater Resistance To Sudden**

**THERMAL CHANGES**



WHEN molten metal is splashed on case hardened glass safety lenses they shatter and disintegrate, as the strain set up by tempering is released. Tulca Safety Lenses, having little or no strain pattern, are unaffected by molten metal.

Send goggle frames to be fitted with sample Tulca Lenses for testing in your own plant. No obligation. The Univis Lens Company, Dayton, Ohio.

**TULCA**

*NON-SHATTERING MATERIAL*

**SAFETY GOGGLE LENSES**

Carbon disulfide, the subject of the second new American Standard, acts as a narcotic in high concentrations, and in low concentrations with prolonged exposure results in cases of severe general nerve poisoning. Its removal presents a serious problem in the rayon industry. It is also used as a solvent for sulphur, fats, oils, etc. and in the manufacture of carbon tetrachloride, camphor, and of rubber and other waterproof cements. The newly completed standard recommends that concentrations of carbon disulfide be kept below 20 parts per 1,000,000 parts of air for general factory and workroom purposes. As an example of the reasonableness of this limit, we may cite a large rayon plant in which by means of a well designed ventilating system the carbon-disulfide concentration has been kept well below the permissible concentration outlined in the new standard.

**Benzine Standard**

Benzene, or benzol, is the subject of the third standard. It is a toxic substance which acts predominantly as a nerve poison, causing depression of the central nervous system; and, with chronic poisoning, damage to the blood, the blood forming organs, and the blood vessels. The newly completed standard provides that the maximum allowable concentration of benzene (benzol) shall be 100 parts per 1,000,000 parts of air for exposures not exceeding a total of eight hours daily.

These three standards and the standard for carbon monoxide previously announced form part of an extensive program. Six additional standards have been drafted and are now before the committee for consideration. These cover carbon tetrachloride, tetrachloride, tetrachlor ethane, chromic acid, nitrogen oxides, lead, and mercury. Six others now actively under way in subcommittes cover trichlorethylene, tetrachlorethylene, formaldehyde, toluol, methanol, and hydrofluoric acid. Eight other standards for toxic substances used widely in defense production are being developed through the short-cut emergency procedure of

# BEAT THE HEAT
*with these*
# Hot Weather Aids!

*You can't get "All-out" Production from workers who are "All-in"!*

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Worn comfortably over forehead, to prevent perspiration running into eyes, fogging goggles or dripping onto work. Save "brow mopping" time. Made of new, soft, highly absorptive material—need no pre-wetting, snap back to shape after squeezing. Inexpensive. Order now.

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**ANTI-MIST for GOGGLES**

Rub on lenses to prevent fogging due to perspiration. Inexpensive. Order a supply.

• *Write for new Hot Weather Leaflet*

**Pulmosan Safety Equipment Corp.**

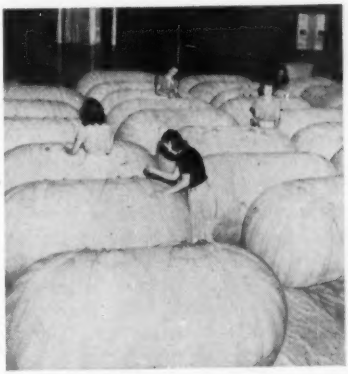
Dept. OH, 176 Johnson St., Brooklyn, N.Y.


the American Standards Association.

Allowable Concentration of Carbon Monoxide (Z37.1-1941), Hydrogen Sulfide (Z37.2-1941), Carbon Disulfide (Z37.3-1941) and Benzene (Z37.4-1941) are available through the American Standards Association, 29 West Thirty-ninth Street, New York City at 20 cents a copy.

## Women In Industry

Essential for the protection of land planes, which are forced down over water, are flotation bags being manufactured by Goodyear Tire & Rubber Company for the U. S. Army and Navy aircraft. Women here are shown putting finishing touches on flotation bags prior to tion for shipment to military plane their final inspection and preparamanufacturers.



***These ladies get bags under their eyes all day.***

# What the Woma Worke

By MARG T. MET

***Here's a close-up industry woman—her paraph a from***

***Mirrored reflection shows a well protected female worker for a tin plate inspection. Note gloves and apron.***

A SAFETY program designed to meet the particular needs of women employees may well start with a campaign toward clothing to suit job requirements. Defense demands, increasing shortage of male labor, the calling into industry of inexperienced girls and of women who have not been employed for a number of years, all intensify the importance of a special program to prevent injury to women workers.

There is an increasing tendency for companies to pay in whole or in part for uniforms, and especially for safety clothing, that they require their workers to wear. This method has the advantage of standardizing quality of the apparel. Instead of khaki, customary for many years, uniforms for women now are in lovely fade-proof shades of every color in the spectrum. Colors may differentiate divisions in the factory. The operator may come to look proudly on the uniform that designates her job as an insignia of her department's safety record.

### Work-Clothing Campaign

To be effective a work-clothing campaign should start with the cooperation of the women workers. Collaboration with the girls who will wear the garments results in their more ready acceptance and

***Posed photograph indicates women wearing goggles, caps, overalls and gloves for welding operations. Goggles cover over eyes during working hours.***

# oma Worker Should Wear

MARG T. METTERT

*se-up industry's well dressed araphe a from shoes to hair-nets*

*Comfortable apparel for female factory work that presents no special hazard.*

enforcement is less of a problem. Direct enforcement belongs in the hands of safety-trained women supervisors, with educational work by plant nurse and physician as well as the safety division.

Work-clothing needs should be based primarily on the requirements and the hazard of the job. In addition to footwear, and dresses or suits, they should consider eye protection, head coverings, hand protection, and special demands of each particular job. These may include leggings, spats, aprons, arm protectors, knee pads, hoods.

**Foot Protection**

It is, perhaps, with proper work shoes that industry can make its best contribution to the health and safety of women employees. In studies covering a period of more than a decade the Women's Bureau of the U. S. Department of Labor has found that falls are a major cause of women's injuries. Foremost in prevention is provision of safe walkway surfaces, good lighting, and good plant housekeeping. Nevertheless, falls may occur primarily because of defective shoes, high heels, worn soles.

The fatigue and nerve strain caused by badly fitted shoes make a perfect setting for an accident. The owner of uncomfortable feet cannot be mentally alert.

In the correct shoe, the ball of the foot is in the tread of the shoe; the width allows for the natural spread of the toes; the shoe fits snugly around the heel and instep. The heel is medium or low. The requirements are simple, but

# FIGHT LOSS OF TIME

***Caused by Athlete's Foot***

**with ALTA-CO POWDER**

Athlete's Foot hampers production. Fight it with the fungicide proved by highly successful use in many of America's largest industrial plants. Only Alta-Co Powder possesses these three advantages:

- **Kills Athlete's Foot fungi in less than 60 seconds**
- **Remains stable in solution**
- **Can be tested instantly by inexperienced help**

Available as a white powder for use where skin tinting is objectionable, or with tracer which leaves a slight yellowish tint when evidence of application is desirable.

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the shoe fitter must be an expert. Briefly, the foot should be measured with the standing body weight placed on a measuring device. The width should be as carefully fitted as the length.

How inadequate supervision of footwear may be is illustrated by a forelady in a plant where trays and racks were handled. On being questioned about her control over footwear, the forelady said she kept her eye on it and spoke to any girl who wore unsuitable shoes. While the forelady discussed the subject, she herself wore a pair of summer sandals exposing her bare toes—a fine target for falling objects.

That it is possible to popularize the low-heeled, comfortable-fitting oxford is evidenced by the current approval of this shoe among college and high school girls and among nurses. The educational campaign necessary will pay dividends in safety and efficiency.

**Head Protection**

A carefully designed head covering is desirable for every factory-employed woman. Terribly painful and disfiguring injuries occur when hair is caught in the moving parts of machinery, varying from home laundering to factory machine operation. In addition to inclosing loose hair, caps are a protection from dust.

It is perhaps in head coverings that there is most opposition from the wearer. A glance at the history of women's work clothing reveals the reason. Long after women in the home rebelled against the dust-cap, a similar headgear was in use in the factory. The National Youth Administration has adopted for its factory employed girls a cap appealing because of its attractiveness and filling the safety requirements. This cap is visored to shade the worker's eyes; it is full above the head band so that all hair can be covered without disturbing the most curled hair-do; and it may be fitted so loosely that machinery catching in the cap will not involve the hair. Nets may be required in addition to the cap if there is much long, loose hair.

*(Please turn to page 20)*

# Goggles Save Six Men's Eyes

***By following Safety Rules Republic Steel Employees prevent serious accidents***

SIX men in Republic's Youngstown District have the use of their eyes today because they followed safety rules and wore goggles on jobs in which there was some possibility of danger.

These men would have suffered untold pain and their families would now be looking forward to the future with much less certainty—if safety rules had not been obeyed.

Below are photographs of two of these six pairs of goggles that were instrumental in saving eyesight of these Republic men.

The goggles in Fig. 1 were worn by an employee in the tube galvanizing department. He was putting a piece of cold spelter into a galvanizing pot when a molten spelter splash struck the right lens of his goggles and cracked the glass. The photograph shows the piece of spelter which adhered to the lens.

***Figure 1***

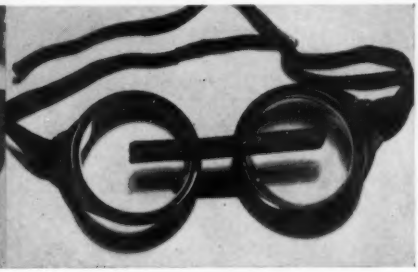

***Figure 2***

The goggles saved him the possible loss of an eye. Figure 2 shows a pair of goggles and a piece of 5/16″ cotter pin. A track worker was using a sledge, while a fellow employee was holding a cold cutter to cut the cotter pin out of a steel wedge that holds the guard rail in position. As the cotter pin was cut through, it deflected from the opposite rail and struck both lenses of the goggles. The force of the blow was so great that the goggle frame caused lacerations above both eyes.

BUT there were no injuries to either eye.

## Women In Industry

*(Continued from page 18)*

**Hand Protection**

Among women, hands and fingers are most likely to be affected by industrial injuries. At the same time finger dexterity is highly important in the factory work done by women. Its destruction means temporary or permanent loss of earning power to the worker, and slowing up of production to the employer.

Hand protectors must be comfortable to wear besides fitting the particular needs of the job.

In handling sharp or rough objects, such as in the inspection of tinplate (illustrated), any durable glove (of inexpensive type) allowing full hand freedom is sufficient. In fine operations or where very small metal parts are handled, finger guards made of rubber or of a durable rubber substitute are sufficient protection and do not impede the work. It is a poor substitute to wrap adhesive tape around the fingers, since its constant use has a harmful effect on the skin.

Methods to avoid dermatitis must include complete protection of the hands. Gloves that can become saturated with a harmful substance are worse than no covering; the soiled gloves actually become a poultice of the poison on the hands. The United States Public Health Service recommends, as a result of a study of suitable fabrics, that Pliofilm, Vinylite, or Koroseal, rather than rubber, to be used as protection against skin irritants. These prevent the irritants from coming in contact with the skin, they are not inflammable, and they are easily washed. They have an elasticity like rubber without its clammy feeling. They can be used where rubber would be attacked by the chemical used.

Too often short gloves are provided and wrists are left exposed. Sleeves should fit snugly over the gloves wherever liquids may run over the edge or materials may collect on the edge and be rubbed into the wrist.

Gloves are the most frequently used item of protective clothing, but there are places where a glove should never be worn. Wearing of gloves around moving machinery

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**ATHLETE'S FOOT**
***the modern way . . .***
***the ONOX way***

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**This offer is unique—but so is Onox. We would like to send you the simple details of the Onox method used successfully by hundreds of institutions from Coast to Coast.**

**ONOX CO., Inc., Dept. B**
**121 Second Street San Francisco**

should be as taboo as the wearing of a necklace. It is a temptation, to women especially, to use gloves in machine work because of the contact with oil and grease. In such work provision should be made of a substitute protection for the hands, such as a skin varnish or cream.

### Eye Protection

The eye is one of the body's most important organs, yet too often its protection is not provided for in industry. One company requiring goggles to be worn by every plant worker has found that most of the eyes known to be saved by these protectors were in occupations usually not considered dangerous to eyes. For example, in upholstering and sewing-machine operations a number of goggles were struck by flying parts of needles.

Wherever goggles are required they must be of an approved design and material. If they are heavy and hot their popularity suffers and it is not easy to enforce their use.

Goggles and eye shields may serve in reducing fatigue in much of the fine work done by women. English experiments found glasses with magnifying lenses an important factor in preventing fatigue and, in increasing production.

### The Work Uniform

Comfort, safety, and efficiency are all served in a uniform planned to fit the work. In bench assembly work, inspection, and other factory employment without special hazards, a simple, well fitting, short-sleeved dress is appropriate. A pleated back in the blouse and a well-cut garment contribute to freedom of motion.

In machine operation, and in work requiring climbing, such as airplane repair, slacks, or coveralls suits are to be preferred. Cuffs and outside pockets should be omitted. If an outside pocket is necessary, a flat pocket is least objectionable.

**DUPOR No. 1**

*with New*

**PLASTIC VALVES**

- Cuts the weight of this Miniature Respirator to less than 1 ounce... Handy as a pair of glasses.
- Can be worn with goggles or while eating, smoking or talking.
- All aluminum construction of DUPOR Respirators have been replaced with plastics! Write for catalog!

**H. S. COVER**

333 Chippewa St.
South Bend, Ind.

**SAMPLE $1.00 POSTPAID**

# New Sign Standards

A NEW standard for industrial accident prevention signs which provides for uniform colors and wording is announced by the American Standards Association. The purpose of this standard is to increase the effectiveness of safety signs in preserving human life.

Safety signs are today used very widely although it is impossible to tell how many injuries or accidents they prevent. When a pair of goggles is smashed, the worker is mighty glad he had them on at the time—very probably the goggles saved his eyes. Yet, a sign warning against performing the operation without goggles or giving instructions that goggles must be worn may have been the original preventor of the injury. A guard may be in place because of a sign telling it should be although the guard usually receives all the credit for preventing the injury.

For maximum safety, it should not be necessary to stop, read, and analyze the meaning of each particular warning sign. Reaction to such signs should be automatic, particularly in workplaces where employees cannot read English readily but can be trained to recognize instantly and be warned by standard sign designs and colors.

**Five Groups**

It is with this thought in mind that the committee developing the standard has divided all accident prevention signs into five major groups:

1. Danger signs to be used to warn about specific dangers only and removed as soon as the danger they warn against no longer exists;
2. Caution signs used to warn against possible danger or unsafe practices;
3. Safety instruction signs providing information regarding general safe practices;
4. Directional signs used to point the way to staircases, fire escapes, exits, etc;
5. Informational signs used to carry messages of a general nature such as rules and regulations.

The standard sets forth the best current practice in color, design, application, and use of all accident signs classified in these five groups.

This standard does not mean that all signs in use should be replaced immediately with standard signs. The committee developing the standard, however, hopes that all new signs and replacements of old signs will be designed and constructed in accordance with these specifications. Thus, in time the accident prevention signs used by all industry will be the same and employees no matter where they work will recognize the same familiar designs and colors that have to them definite meanings.

American Standard Specifications for Industrial Accident Prevention Signs—Z35.1-1941 has been published in pamphlet form and is now available at 35 cents from the American Standards Association, 29 West Thirty-ninth Street, New York City.

# permanent wave

**was put in this Lehigh Safety Shoe** when it got caught between the couplers on a box car and a moving locomotive! It's a miracle the man's foot wasn't mashed to a pulp! But the armorplate steel toe box built into every pair of Lehighs got him off with only a badly bruised instep. *EVERY industrial plant... *yours included*... has jobs that are equally hazardous to workmen's toes. And Lehigh Safety Shoes on *your* men's feet will help greatly to minimize injuries resulting from such accidents...save you up to 20% of your compensation costs...even help to lower your compensation insurance rate! This protection costs you exactly nothing! And Lehigh offers you America's broadest selection of safety shoe types, made to "Fit Into Industry." Send for a catalog TODAY. Lehigh Safety Shoe Co., Inc., Allentown, Pa.

# Dust Control in Ceramic Industry

L. M. MERRITT
Division of Safety Hygiene, Columbus, Ohio

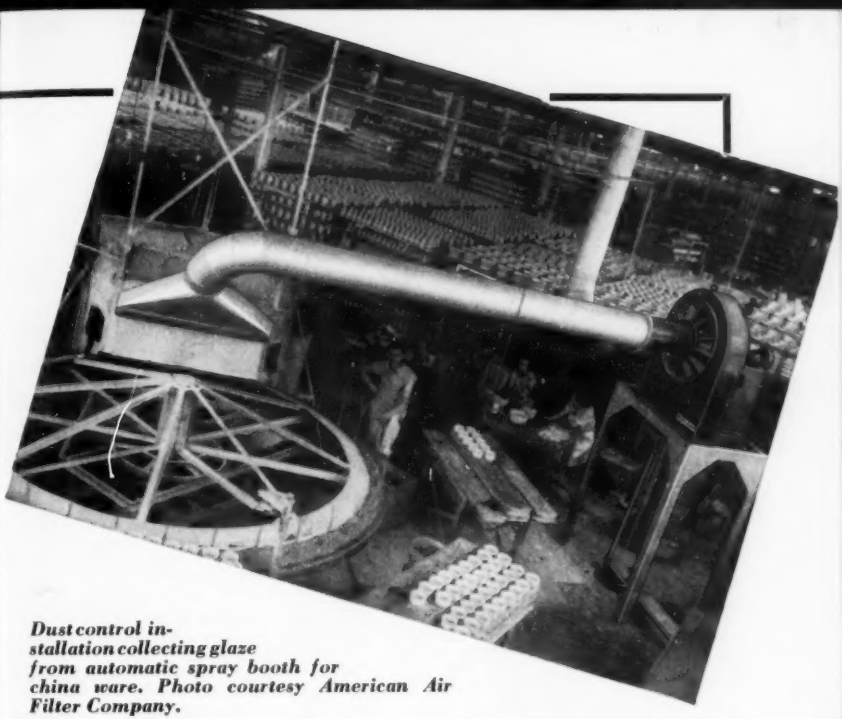
***In this article Mr. Merritt continues his trip through a ceramic plant, outlining specific operations and hazards, and control methods.***

The refractory mixture for floor and wall tile contains so little water that it feels dry to the touch. It should be kept in tight bins. Workmen should wear respirators when shovelling it into carts. There is a dust hazard produced at every handling unless precautions are taken to remove the part stirred into the air at the time it is separated from the pile. While the tile are formed, they are immediately fettled either mechanically or by hand. Women brush the mould marks away. In years past, these women needed no powder to keep their faces from becoming shiny. Now these plants are installing ventilated fettling benches to remove the dust. If the women are careful to brush toward the suction opening, practically all of the dust is removed. The women do not need head coverings. They still show their usual complexions and their noses get shiny.

**Ventilated Benches**

Fettling and finishing in general require ventilated benches. Dry-press ware requires the removal of mould marks. This should be done over suction openings. China and tableware finishing often is done on revolving wheels. Some of these are mechanically motivated while others must be moved by hand. In either case, the sharp tool cuts away the surplus body and creates a dust. A suction downward removes the dust as formed and saves the finisher from working in a highly siliceous dust laden atmosphere during the working day. Cast-ware is often finished while in a green or leather-hard state. Frequently, when it is left in the moulds an extra day, it becomes dry. It is recommended that the fettling or finishing bench for the caster be connected to air suction to remove the cuttings and dust created.

Sanitary ware presents the hardest problem of fettling. After the pieces have been made and dried to a leather-hard state in the plaster, they are removed. The pieces vary in size from the smallest tooth bowl to the four foot high urinal. Each must be scraped and sponged. Frequently, the pieces are dry before finishing. Each caster finishes his own ware. Ventilated cabinets



***Dust control installation collecting glaze from automatic spray booth for china ware. Photo courtesy American Air Filter Company.***

with the wheel located inside apparently offer the best solution. For urinals the cabinet must be high, while for lavatories and wash bowls the cabinet and wheel can be set on a bench. A movement of air of approximately 100 F. P. M. at the face of the cabinet is necessary.

**Burning**

Most ware is burned either in saggers or on stationary platforms. Saggers can be used in either periodic kilns or tunnel kilns. The stationary platforms are generally set on the tunnel kiln cars. Only the vitrified china flat ware and small floor tile are burned in sand or flint. China flat ware is sanded by vibrating either flint or round grain sand between the pieces while they stand in piles on setters. This operation presents a hazard when it is done without ventilation. It is recommended that this work be done inside a cabinet with the workmen outside and that the air movement into the cabinet be not less than 100 F. P. M. face velocity.

The kiln setter must place these stacks of ware in the saggers before he sets them in the kiln or on the car. He should be protected by a definite movement of air directed away from his nostrils. This work should be done in a cabinet. After the ware has been bisqued, it must be cleaned before glazing.

**Stop Fire!**

**Order Now**

**NEW FIRE BLANKET CONTAINER**

- 20" high, 9" diameter
- Opens easily
- Painted red
- Sheet metal body

**Write to**
**Safety Clothing & Equipment Company**
**7014 Euclid**
**Cleveland, Ohio**

In the making of some tableware, cleaning and glazing are done in one machine. The ware is placed on a belt. It passes through sand blast equipment first and then through the glaze spray. If this equipment is in good repair, it is probably the most efficient. Both parts of the machine must be under heavy suction to remove the dust. Where the ware is cleaned by hand, women use the brush. Often cleaning is done mechanically. Then the equipment should be ventilated as more dust is stirred by the faster movement of pieces through the machine. This cleaning is done generally by tumbling. This should be done in ventilated equipment since the dust is very high in free silica.

**Glazing**

Almost all glazes used today contain flint. Many also contain lead. Either is harmful to the workman who inhales too much. The hazard is very remote when the ware is dipped into the glaze mixture. But when the glaze is sprayed on the piece, it will cause a high siliceous dust near the spray machine if it is allowed to get into the atmosphere. The fine particles release the moisture coating quickly and stay in the atmosphere for a long time unless an air current removes them. An air movement should be provided to prevent the back lash of the spray from getting out of the spray cabinet. The writer has found continuous spray cabinets where an air movement of 240 F. P. M. into the cabinet at the spray control opening was not enough. Generally, a movement of approximately 300 F. P. M. will prevent glaze from getting into the room. Care must also be taken, where the ware leaves the cabinet on a continuous machine, that the dust caused by the spray does not leak through this opening into the room.

Salts of cadmium and selenium and other injurious compounds are used in the decorating shop. Most of these are sprayed on the ware. This should be done in ventilated cabinets, with an air movement into the booth of not less than 100 F. P. M. at the face.

**Good Housekeeping**

Good housekeeping is a requisite in every plant. Dust cannot be kicked up from a clean floor. Remove dust from overheads often. Clean turnings from under the feet of workmen. Keep spoiled dried ware in containers rather than throwing it on the floor. Many plants now use vacuum cleaners to keep their floors and overheads free of unwanted material. These can be used at any time of the day. Broom sweeping should be done only when the workmen are out of the plant, and then the sweeper should wear a respirator.

# Right off the Docket

**The trend of litigation on workmen's health and accident compensation is reflected in these briefs of the latest and most representative cases coming to trial in the intervals between issues. Familiarity with this trend is important to every industrialist.**

**Head Blow Causes Loss of Sight**

The employee, a carpenter, fell while handling a ladder.. He suffered a cut over his right eye, and in some way received a blow on the left temple which raised a considerable lump. Stitches were taken over the right eye. A few days later the employee complained of pain over the left eye. Examination revealed that the claimant was suffering from iritis, caused the doctor said, by the blow to the left temple. The claimant was treated for the iritis, but some time later a cataract developed. This was removed, but the claimant's vision in the left eye was so impaired as to render the eye, industrially a total loss.

Although the medical testimony was conflicting, some doctors holding that the loss of vision was due to disease and not to the blow sustained by the claimant, the Court held that there was sufficient, competent evidence to find that the disability was due to the blow, and an award was granted.

*P. H. Reynolds Co. vs. McKnight* (*Tenn.*) 148 S.W. 2nd 357 (March-1941)

**Violation of Company Rules Does Not Prevent Award**

A stockroom worker was found dead at the bottom of an elevator shaft. The worker had been ordered not to use this elevator, and had been directed to wait for an adjacent elevator in order to take certain merchandise to the basement. The Court held that the circumstances of this case warranted an award.

Violations of rules fall into two classes: the first, where the violation falls within the scope of the employment; the second, where the transgression takes the employee outside the sphere of his work. The former type of case is compensable, the latter is not. The Court held in this case that the employee although violating a company rule was nevertheless acting within the scope of his employment. He was attempting to do work he was employed to do, but was ignoring instructions as to the manner of doing it.

*Heyman Distributing Co. Inc. vs Industrial Commission* (Illinois) 32 N.E. 2nd 894 (April-1941)

**Cerebral Hemorrhage Caused by Hard Work, Long Hours and Severe Exposure**

The employee worked in the water department of the Town of Montclair. During an emergency he was transferred to aid in snow removal. Exposed to severe weather conditions of cold, sleet, snow and wind, he worked abnormally long hours under these trying conditions. He sustained a cerebral hemorrhage which resulted in a paralysis, totally and permanently disabling him.

The disability was found to be compensable as resulting from an "accident" arising out of the employment. The Court stated that the re-

quirement of the Compensation Act that injury or death to be compensable must arise by "accident" is satisfied if the claimant proves that the condition complained of is related to or affected by the employment, and if, but for the employment, it would not have occurred. This proof was held to have been established in this case. *Swann vs Town of Montclair (N.J.)* 18 Atl 2nd 721 (Feb.-1941)

**Injuries Sustained at Place of Employment Must be in Course of Employment to be Compensable**

The Superior Court of Pennsylvania said in this case: "Under the Workmen's Compensation Act, an injury sustained in 'course of employment' embraces all injuries received while engaged in furthering the business of the employer, and injuries received on the premises, subject to these limitations: (1) The employee's presence must ordinarily be required at the place of the injury; or, (2) if not so required, the departure of the servant from the usual place of employment must not amount to an abandonment of unemployment, or be an act wholly foreign to his usual work, it must merely be an inconsequential departure from the line or place of duty."

The Court held, where a workman engaged as a general handy man in a bakery with usual hours of employment from 7 A.M. to 4 P.M., subject to call at any time, stayed in bakery until approximately 5 P.M., and some 30 minutes later engaged in a game of tag with two girls, not fellow employees, and while so playing fell into an elevator shaft, and there was nothing to show that he was doing anything at the time that bore any relation to his employment, the injuries sustained were not sustained in the course of employment, and the employee's death was not compensable.
*Lewis vs Capital Bakers Inc.* (Penn) 18 Atl 2nd 883 (March-1941)

**Heavy Lifting Results in Heart Impairment**

The claimant was employed as a production manager of a dyeing and printing plant. He was in charge of production, including the expediting of all rush orders. One morning when an important customer's truck came for an order, the order was not quite ready. In an effort to prevent delay the claimant seized a roll of silk weighing about 75 pounds, and, holding it upright against his chest proceeded to carry it to a nearby elevator. After taking a few steps the employee felt pains in his heart, chest and shoulder blades. A little later he collapsed and was taken home. He was found to be suffering from coronary thrombosis. The claimant, previously, was troubled with arteriosclerosis.

An award was granted for the disability. The claimant's condition resulted from an accident arising out of and in the course of employment, the Court stated. The previous disease of arteriosclerosis did not prevent the granting of compensation. It is not necessary that the injury flowing from the accident be the primary cause in initiating the disability, and the requirements of the Act are satisfied if, it appears that the injury, acting as an exciting or provocative cause, aggravates a pre-existing diseased condition, and thereby contributes in hastening its culmination in disability or death.
*Hertzberg vs Kapo Dyeing & Printing Co.* (N.J.) 18 Atl 2nd 736 (Jan.-1941)

by Hilton E. Roberts,
Member of the
Ohio and New York Bars.

**JOHNSON ANKLE ACTION RUBBER LADDER SHOES**

***prevent accidents***

★ These shoes are endorsed by insurance companies and safety engineers everywhere.

**$1.80 per pair for straight ladders. A trial order will prove their many merits.**

**JOHNSON LADDER SHOE CO. Eau Claire, Wis.**

## Goggles at G.E.

*(Continued from page 11)*

of safety spectacles in their work.

Where an employee needs eye protection and wears prescription spectacles, he obtains a prescription from his own eye doctor, then obtains an order from his foreman and takes both to the Works Hospital. There a nurse measures the pupillary distance, distance between lenses, temple length, and determines the size of the lens and enters this information on the prescription. The spectacles are then ordered made up to this prescription and when they are delivered to the Hospital the workman is notified. He comes to the Hospital and they are fitted to him. Before he leaves he is advised that if at any time these feel uncomfortable he should return to the hospital where they will readjust them.

***Goggles that were put to the test. Upper, protection against puddle of sprayed molten steel; bottom, protection against steel chip.***

Since we started the campaign of eye safety we have had several outstanding cases where we feel that a safety lens has saved a man's eye. In such cases we have given prominence to this in our Works newspaper and generally have had a photograph with the article.

Time does not permit my relating to you the startling experiences we have had during the past two years with safety goggles and spectacles, but there have been many.

### 2100 Pairs

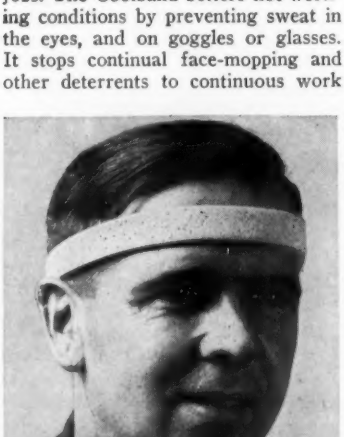
Today we have about 2100 pairs of safety spectacles being worn in the plant, 972 of which are ground to the wearers' prescription. These 2100 safety spectacles represent about 62 per cent of the eye protection in the plant while about 38 per cent are cup type goggles. The tendency is towards more spectacles and less goggles as we feel this is a step in the right direction. A workman will wear his safety spectacles constantly, provided they are properly fitted, while a man who wears cup type goggles will invariably wear his goggles on his forehead some of the time and then he has no eye protection. Safety spectacles are comfortable before the eyes, yet they cannot be worn with comfort on the forehead.

Today, our workmen have a much greater respect for their goggles and spectacles because they are carefully fitted to them by a nurse. They are clean and they are the type they need for their particular work, and they now appreciate their value because of our campaign of education.

Needless to say, our eye accidents have been considerably reduced.

# New Ideas IN THE IE

PREVENTS SWEAT IN EYES—Announcement is made by Mine Safety Appliances Company of the new M. S. A. Coolband—a modern perspiration retainer for men on hot jobs. The Coolband betters hot working conditions by preventing sweat in the eyes, and on goggles or glasses. It stops continual face-mopping and other deterrents to continuous work

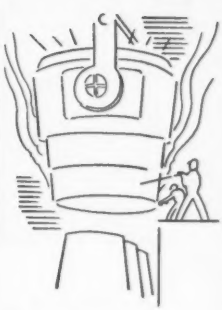


arising from uncontrolled head perspiration. The M. S. A. Coolband offers all-round-the-head absorption. It consists of a soft, flexible band which encircles the head—clinging softly without binding, and creating a cooling effect through constant absorption of perspiration.

GASOLINE ALARM—A feature that should prove of interest to all safety engineers as well as to thousands of men actively engaged in filling gasoline tanks is the Scully Ventalarm.

Ventalarm, installed on top of the gasoline tank in series with the vent, whistles out the filler neck, while the tank is being filled, until the tank is one gallon from full capacity. This enables the gun to be shut off and still allow for the expansion of the gasoline on hot summer days or in heated garages.

PREVENT NAIL WOUNDS—Protective Insoles for wearing inside rub-



ber boots and shoes have new comfort because of a new type of construction. Two thin protective layers of a special plastic material assure puncture-resistance and make these insoles so flexible the sole may be rolled in a circle. :A woven, glove-fitting cover gives cushion-comfort. They are non-absorbent and weigh two ounces. Available in sizes from 6 to 11—E. D. Bullard Company, 275 Eighth Street, San Francisco, California.

LARGE WATER COOLER—The Puro Filter Corporation of America has added a new bubbler top cooler to their line in order to meet the requirements of those companies that desire a large capacity water cooler.

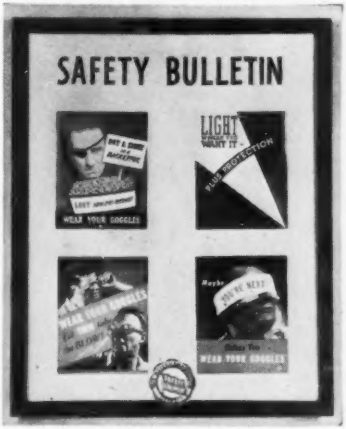
This cooler has a capacity of 16 to 20 gallons per hour, and is equipped with a ½ H.P. highside. Louvre front panels have been incorporated in this design in order to increase the air circulation and harmonize with the general appearance of the cooler.

The lowside has a very large cooling and storage capacity. The non-plugging precooler, specially designed by Puro, is used in this cooler, and is said to increase the cooling capacity and general efficiency of operation.

For further information write to Puro at 440 Lafayette Street, New York City.

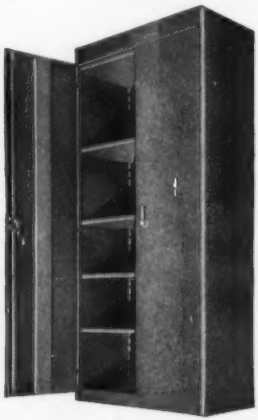
STREAMLINED BULLETIN BOARDS—Streamlined Bulletin Boards are announced by The Boyer-Campbell Company, Detroit, Mich.

While the B & C Bulletin Board is made in single units they can be mounted in series and used for plant notices, production schedules, special exhibits, etc.




The B & C Bulletin Board is 30" wide x 37" high, and 1⅞" deep. The metal part of the case is of 20 gauge steel and has a modern crackle green enamel finish. The door 28¼ x 35½" is fitted with double-strength glass protected by channel rubber along all edges, suspended by three hinges; fitted with hasp and staple.

LOCKER EQUIPMENT—New advances in the design of storage and wardrobe cabinets have been incorporated in the new Steelart cabinet line. The line includes both double-door and single-door storage, wardrobe, and combination cabinets, and Desk-hi, Counter-hi, and janitor's cabinets.



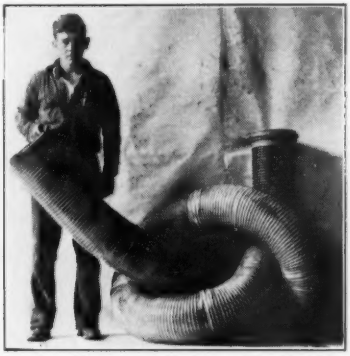
The outstanding new feature claimed for Steelart cabinets is the streamlined, round-corner construction. Other improvements include greater capacity, tubular framework, bigger hinges and adjustable shelves.

The Steelart Cabinet line is manufactured by Lyon Metal Products, Incorporated, General Offices, Aurora, Illinois.

BLOWER AND FAN HOSE—Two types of large diameter wire reinforced rubber hose, suitable for both suction or blowing are illustrated. Where portability or stowage when not in use is a primary consideration, the special lengthwise collapsing type is recommended by the manufacturers, Hersey & Company, Inc., Seattle, Washington.

All diameters from 3" to 28" are manufactured and can be had in several weights and compositions to meet special conditions. Although tough in construction, the hoses are light weight and extremely flexible, a 90° bend being easily formed in one to three diameters of length depending on the diameter.

These new flexible air ducts are for use with portable ventilators and as



adjustable elbows or connections for blower pipe lines used in dust and fume collection and disposal. Either type can be cut in short sections and readily cemented and taped to metal pipe ends; hoods or blower connections. For places where frequent connecting and disconnecting is necessary, a one-screw coupling is offered by the manufacturer.

The Ful-Vue Goggle is light in weight — but strong as Dempsey in his prime. It is equipped with the Super-Armorplate Lenses which have *extra-impact* strength. The bridge-nose is double-braced to add strength to the frame and keep it in adjustment. Nose-pads are self-adjusting . . . side-vision free from obstruction. *And*, 3 models . . . large, medium, small . . . assure each individual worker an exact, comfortable fit.

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